

Data Input Formats for the Re-engineered Air Quality Subsystem

This document provides the new format to process batch transactions for the re-engineered Air Quality Subsystem. The first field of all input formats will be the format type. This will instruct the system what type of data is being sent to the database. Valid transaction types are listed below. The second field will be the type of affect the particular transaction will have on the database. These will either be an "Insert" (I), "Update" (U), or "Delete" (D). Please note that not all data is able to be provided through a batch process. Descriptions on how to provide data through an on-line mode will be made available in the coming months.

All transactions will be pipe delimited ("|"). A delimiter should not follow the final field in a record, so there will always be one less delimiter than fields for the given transaction type. It is essential that the proper number of delimiters be provided for a given transaction. So even if you need to only update one column on the database with "Monitor Basic" information, you still need to have 27 delimiters in that row. If you need to report a given field is null, place two delimiters back to back ("||"). Textual fields should not be enclosed with single or double quotation marks. The choice to use delimited versus positional is based on:

- a) **Change in the monitor-id:** The monitor id will now consist of a 2-digit POC code. Instead of having to worry about adding a "0-padding" in front of or behind the current POC, you will be able to use the same id as now.
- b) **Potential changes in record lengths:** There is always the potential of record lengths changing. We hope by using a delimited format, this will minimize the impact of any future changes in the structure of the data input formats or new entries in the associated reference tables. The choice of the pipe delimiter was to help ensure that the symbol would not be inadvertently used in free-format text fields.

Other Notation: R - Field is required for any action
 R(n) - Field is Required for action 'n' (R(I) means required for an Insert Action for example)
 X(n) - Conditionally Required for action 'n'

<u>Transaction Types:</u>		<u>Number of Fields</u>	<u>Number of Delimiters</u>
AA	Basic Site Information	42	41
AB	Site Street Information	12	11
AC	Site Open Path Information	13	12
MA	Basic Monitor Information	28	27
MB	Monitor Sampling Periods	9	8
MC	Monitor Type Information	10	9
MD	Monitor Agency Role	11	10
ME	Monitoring Objective Information	11	10
MF	Monitor Sampling Schedule	22	21
MG	Monitor Street Description	9	8
MH	Monitor Obstruction Information	11	10
MI	Monitor Regulatory Compliance	10	9
MJ	Monitor Collocation Period	11	10
MK	Monitor Minimum Detectable	14	13
RC	Composite Raw Data	25	24
RD	Hourly, Daily, Sub-Hourly Raw Data	26	25
RA	Accuracy Data	32	31
RP	Precision Data	16	15
RS	Annual Summary Data	38	37

Please Note

The intent of the "Formatting Rules" described on the following pages are not intended to illustrate the complete validation procedures that a particular piece of data will be subject to. It is merely stating the format of the field or foreign key constraint as defined in the database. Future publications will explain all data validations in greater detail.

S-1. Basic Site Information (AA)

Field Name	Formatting Rule
Transaction Type ^R	Must exist within Reference Table (AA = Basic Site Information)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table if Action code is 'U' or 'D'
Latitude ^{X(I)}	Number - 2.6 signed
Longitude ^{X(I)}	Number - 3.6 signed
UTM Zone ^{X(I)}	Number - 2.0 format
UTM Easting ^{X(I)}	Number - 8.2 format
UTM Northing ^{X(I)}	Number - 8.2 format
Method of Collection ^{R(I)}	Must exist within Reference Table
Horizontal Datum ^{R(I)}	Must exist within Reference Table
LDP Source Scale ^{R(I)}	Number - 12.0 format
Measurement Accuracy Value ^{R(I)}	Number - 8.2 format
LDP Vertical Measure ^{R(I)}	Number - 8.2 format
Time Zone	Must exist within Reference Table, if supplied
Support Agency ^{R(I)}	Must exist within Reference Table
Street Address ^{R(I)}	Text
City Code ^{R(I)}	Must exist within Reference Table
Urban Area Code ^{R(I)}	Must exist within Reference Table
AQCR ^{R(I)}	Must exist within Reference Table
Land Use ^{R(I)}	Must exist within Reference Table
Location Setting ^{R(I)}	Must exist within Reference Table
Date Site Established ^{R(I)}	Date - YYYYMMDD format
Date Site Terminated	Date - YYYYMMDD format
Zip Code	Must exist within Reference Table, if supplied
Congressional District	Must exist within Reference Table, if supplied
Block	Must exist within Reference Table, if supplied
Block Group	Must exist within Reference Table, if supplied
Census Tract	Must exist within Reference Table, if supplied
Class I Area	Must exist within Reference Table, if supplied
Local Region	Must exist within Reference Table, if supplied
Site Name	Text
HQ Evaluation Date	Date - YYYYMMDD format
Regional Evaluation Date	Date - YYYYMMDD format
Compass Sector	Must exist within Reference Table
Distance to City	Number - 8.2 format
Type Meteorological Site	Must exist within Reference Table, if supplied
Meteorological Site ID	Must exist within Reference Table, if supplied
Distance to Meteorological Site	Number - 8.2 format
Direction to Meteorological Site	Must exist within Reference Table, if supplied
State or Local ID	Text

S-2. Site Street Information (AB)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (AB = Site Tangent Street Data)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Tangent Street Number ^R	Number - 2.0 format
Street Name ^{R(I)}	Text
Type Road ^{R(I)}	Must exist within Reference Table
Traffic Count ^{R(I)}	Number - 12.0 format
Year of Traffic Count ^{R(I)}	Date - YYYY format
Direction to Site ^{R(I)}	Must exist within Reference Table
Source of Traffic Count	Must exist within Reference Table, if supplied

S-3. Site Open Path Information (AC)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (AC = Site Open Path Data)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Open Path Number ^R	Number - 2.0 format
Direction to Transmitter ^{R(I)}	Must exist within Reference Table
Beam Length ^{R(I)}	Number - 8.2 format
Height of Transmitter ^{R(I)}	Number - 8.2 format
Height of Receiver ^{R(I)}	Number - 8.2 format
Minimum Height ^{R(I)}	Number - 8.2 format
Maximum Height ^{R(I)}	Number - 8.2 format
Land Use Under Path ^{R(I)}	Must exist within Reference Table

M-1. Basic Monitor Information (MA)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (MA = Basic Monitor Information)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table if Action code is 'U' or 'D'
Project Class	Must exist within Reference Table, if supplied
Dominant Source	Must exist within Reference Table, if supplied
Measurement Scale	Must exist within Reference Table, if supplied
Open Path Number	Must exist within Site Open Path Table, if supplied
Probe Location Code	Must exist within Reference Table, if supplied
Probe Height	Number - 8.2 format
Horizontal Distance	Number - 8.2 format
Vertical Distance	Number - 8.2 format
Surrogate Flag Indicator	'Y' or 'N'
Unrestricted Air Flow Indicator	'Y' or 'N'
Sample Residence Time	Number - 8.2 format
Worst Site Type	Must exist within Reference Table, if supplied
Applicable NAAQS Indicator	'S', 'A', or 'B', if supplied
Spatial Average Indicator	'Y' or 'N', if supplied
Schedule Exemption Indicator	'Y' or 'N', if supplied
Community Monitoring Zone	Number - 4.0 format
Pollutant Area Code - 1	Must exist within Reference Table, if supplied
Pollutant Area Code - 2	Must exist within Reference Table, if supplied
Pollutant Area Code - 3	Must exist within Reference Table, if supplied
Pollutant Area Code - 4	Must exist within Reference Table, if supplied
Pollutant Area Code - 5	Must exist within Reference Table, if supplied

M-2. Monitor Sampling Periods (MB)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (MB = Monitor Sampling Period)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Date Sampling Began ^R	Date - YYYYMMDD
Date Sampling Ended	Date - YYYYMMDD

M-3. Monitor Type Information (MC)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (MC = Monitor Type Assignment)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Monitor Type ^R	Must exist within Reference Table
Monitor Type Begin Date ^R	Date - YYYYMMDD
Monitor Type End Date	Date - YYYYMMDD

M-4. Monitor Agency Role (MD)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (MD = Monitor Agency Role)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Role Name ^{R(I)}	Must exist within Reference Table
Agency Code ^R	Must exist within Reference Table
Begin Date ^{R(I)}	Date - YYYYMMDD
End Date	Date - YYYYMMDD

M-5. Monitoring Objective Information (ME)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (ME = Monitor Objective)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Monitor Objective ^R	Must exist within Reference Table
Urban Area Represented ^{X(I)}	Must exist within Reference Table, if supplied
MSA Represented ^{X(I)}	Must exist within Reference Table, if supplied
CMSA Represented ^{X(I)}	Must exist within Reference Table, if supplied

M-6. Monitor Sampling Schedule (MF)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (MF = Monitor Sample Schedule)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
RCF Code ^R	Must exist within Monitor Sampling Period
RCF Begin Date ^R	Date - YYYYMMDD format
RCF End Date	Date - YYYYMMDD format
Number of Samples - January	Number – 12.0 format, if supplied
Number of Samples - February	Number – 12.0 format, if supplied
Number of Samples - March	Number – 12.0 format, if supplied
Number of Samples - April	Number – 12.0 format, if supplied
Number of Samples - May	Number – 12.0 format, if supplied
Number of Samples - June	Number – 12.0 format, if supplied
Number of Samples - July	Number – 12.0 format, if supplied
Number of Samples - August	Number – 12.0 format, if supplied
Number of Samples - September	Number – 12.0 format, if supplied
Number of Samples - October	Number – 12.0 format, if supplied
Number of Samples - November	Number – 12.0 format, if supplied
Number of Samples - December	Number – 12.0 format, if supplied

M-7. Monitor Street Description (MG)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (MG = Monitor Tangent Road)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Tangent Street Number ^R	Must exist within Site Tangent Street Table
Distance from Monitor ^{R(I, U)}	Number - 8.2 format

M-8. Monitor Obstruction Information (MH)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (MH = Monitor Obstruction)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Type Obstruction ^R	Must exist within Reference Table
Direction to Monitor ^R	Must exist within Reference Table
Distance to Monitor ^R	Number - 8.2 format
Height of Obstruction ^R	Number - 8.2 format

M-9. Monitor Regulatory Compliance (MI)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (MI = Monitor Reg. Compliance)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Monitor Regulation Code ^R	Must exist within Reference Table
Compliance Indicator	'Y' or 'N'
Compliance Date	Date - YYYYMMDD format

M-10. Monitor Collocation Period (MJ)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (MJ = Monitor Collocation Period)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Collocation Begin Date ^R	Date - YYYYMMDD format
Collocation End Date	Date - YYYYMMDD format
Distance from Primary Monitor ^{R(I)}	Number - 8.2 format
Primary Monitor Indicator	'Y' or 'N'

M-11 Monitor Minimum Detectable (MK)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (MK = Min. Detectable Period)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Alternate MDL ID ^R	Number - 2.0 format
Sample Duration ^{R(I)}	Must exist within Reference Table
Unit ^{R(I)}	Must exist within Reference Table
Method ^{R(I)}	Must exist within Reference Table
Sampling Frequency	Must exist within Reference Table, if valued
Composite Type	Must exist within Reference Table, if valued
Minimum Detect Value	Number - 5.5 format

R-1 Composite Raw Data (RC)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (RC = Composite Data Type)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Unit ^{R(I)}	Must exist within Reference Table
Method ^{R(I)}	Must exist within Reference Table
Year ^R	Date – YYYY format
Period ^R	Must exist within Reference Table
Number of Samples ^{R(I)}	Number – 10.0 format
Composite Type ^{R(I)}	Must exist within Reference Table
Sample Value ^{R(I)}	Number - 5.5 format
Alt. MDL ID	Must exist within Monitor Minimum Detection Record
Qualifier-1	Must exist within Reference Table, if valued
Qualifier-2	Must exist within Reference Table, if valued
Qualifier-3	Must exist within Reference Table, if valued
Qualifier-4	Must exist within Reference Table, if valued
Qualifier-5	Must exist within Reference Table, if valued
Qualifier-6	Must exist within Reference Table, if valued
Qualifier-7	Must exist within Reference Table, if valued
Qualifier-8	Must exist within Reference Table, if valued
Qualifier-9	Must exist within Reference Table, if valued
Qualifier-10	Must exist within Reference Table, if valued

R-2. Hourly, Daily, and Sub Hourly Raw Data (RD)

Field Name	Formatting Rule
Transaction Type ^R	Must exist within Reference Table (RD = Raw Data Type)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Sample Duration ^{R(I)}	Must exist within Reference Table
Unit ^{R(I)}	Must exist within Reference Table
Method ^{R(I)}	Must exist within Reference Table
Date ^R	YYYYMMDD format
Start Time ^R	hh:mm format
Sample Value ^{X(I,U)}	Number - 5.5 format
Null Data Code ^{X(I,U)}	Must exist within Reference Table, if valued
Sampling Frequency	Must exist within Reference Table, if valued
Alternate MDL ID	Must exist within Monitor Protocols Table for the Monitor
Qualifier-1	Must exist within Reference Table, if valued
Qualifier-2	Must exist within Reference Table, if valued
Qualifier-3	Must exist within Reference Table, if valued
Qualifier-4	Must exist within Reference Table, if valued
Qualifier-5	Must exist within Reference Table, if valued
Qualifier-6	Must exist within Reference Table, if valued
Qualifier-7	Must exist within Reference Table, if valued
Qualifier-8	Must exist within Reference Table, if valued
Qualifier-9	Must exist within Reference Table, if valued
Qualifier-10	Must exist within Reference Table, if valued

R-3 Accuracy Data (RA)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (RA = Accuracy)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Accuracy Audit ID Number	Number - 2.0 format (Legacy "Sequence #")
Sample Duration ^R	Must exist within Reference Table
Unit ^{R (I, U)}	Must exist within Reference Table
Method ^{R (I, U)}	Must exist within Reference Table
Year Represented	Date - YYYY format
Quarter Represented	'Q1', 'Q2', 'Q3', or 'Q4'
Date ^R	Date - YYYYMMDD format
Type Audit ^{R (I)}	Must exist within Reference Table
Local Primary Standard ^{R (I)}	Must exist within Reference Table
Audit Class ^{R (I)}	Must exist within Reference Table
Accuracy Type ^{R (I)}	Must exist within Reference Table, if supplied
Audit Sample ID	Text
Expiration Date	Date - YYYYMMDD format
Audit Scheduled	Date - YYYYMMDD format
Level 1 Actual Value ^{X (I, U)}	Number - 5.5 format
Level 1 Indicated Value ^{X (I, U)}	Number - 5.5 format
Level 2 Actual Value ^{X (I, U)}	Number - 5.5 format
Level 2 Indicated Value ^{X (I, U)}	Number - 5.5 format
Level 3 Actual Value ^{X (I, U)}	Number - 5.5 format
Level 3 Indicated Value ^{X (I, U)}	Number - 5.5 format
Level 4 Actual Value ^{X (I, U)}	Number - 5.5 format
Level 4 Indicated Value ^{X (I, U)}	Number - 5.5 format
Other Level Actual Value ^{X (I, U)}	Number - 5.5 format
Other Level Indicated Value ^{X (I, U)}	Number - 5.5 format
Zero Span	Number - 5.5 format

R-4 Precision Data (RP)

<u>Field Name</u>	<u>Formatting Rule</u>
Transaction Type ^R	Must exist within Reference Table (RP = Precision Data)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Precision ID ^R	Number - 2.0 format
Sample Duration ^{R (I, U)}	Must exist within Reference Table
Unit ^{R (I, U)}	Must exist within Reference Table
Test Method	Must exist within Reference Table, if supplied
Date ^R	Date - YYYYMMDD format
Test Value	Number - 5.5 format
Indicated Method	Must exist within Reference, if supplied
Indicated Value	Number - 5.5 format
Collocated POC ID ^{X (I)}	Must exist within MONITOR Table
Precision Sample ID	Text - Up to 10 characters
Agency Performing Audit	Must exist with AGENCIES Table

R-5 Annual Summary Data (RS)

Field Name	Formatting Rule
Transaction Type ^R	Must exist within Reference Table (RS = Annual Summary)
Action Code ^R	Must = I, U, or D
State Code ^R	Must exist within Reference Table
County Code ^R	Must exist within Reference Table
Site ID ^R	Must exist within SITE table
Parameter ^R	Must exist within Reference Table
POC ^R	Must exist within MONITOR table
Sample Duration ^R	Must exist within Reference Table
Unit ^{R(I)}	Must be in terms of standard units for the Parameter
Sampling Methodology ^{R(I)}	Must exist within Reference Table
Year ^R	Date - YYYY format
Exceptional Data Type ^R	'0', '1', or '2'
Count of Observations	Number - 5.0 format
Number of Exceptional Events	Number - 5.0 format
Highest Sample Value	Number - 5.5 format
Date of Highest Sample Value	Date - YYYYMMDD Format
Time of Highest Sample Value	hh:mm format
2nd Highest Sample Value	Number - 5.5 format
Date of 2nd Highest Sample Value	Date - YYYYMMDD format
Time of 2nd Highest Sample Value	hh:mm format
3rd Highest Sample Value	Number - 5.5 format
4th Highest Sample Value	Number - 5.5 format
5th Highest Sample Value	Number - 5.5 format
Lowest Sample Value	Number - 5.5 format
Arithmetic Mean	Number - 5.5 format
Arithmetic Standard Deviation	Number - 5.5 format
Geometric Mean	Number - 5.5 format
Geometric Standard Deviation	Number - 5.5 format
10th Percentile	Number - 5.5 format
25th Percentile	Number - 5.5 format
50th Percentile	Number - 5.5 format
75th Percentile	Number - 5.5 format
90th Percentile	Number - 5.5 format
95th Percentile	Number - 5.5 format
98th Percentile	Number - 5.5 format
99th Percentile	Number - 5.5 format
Percent of Observations	Number - 6.4 format
Number < MDL	Number - 5.0 format

At least one of these fields must be valued on an Insert or Update